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ABSTRACT

As part of a study to investigate the immediate and long term effects of preschool upon educationally advantaged children, data from three waves of preschool-age subjects (N=291) and followup data on two waves of kindergarten-age subjects (N=171) were analyzed. All children in the sample were determined to be educationally advantaged, and all demonstrated remarkable intellectual capabilities. Five measures were selected for preschool testing. These included (1) the Test of Motor Abilities for Young Children, (2) the Slosson Intelligence Test, (3) the Gesell School Readiness Test (GSRT), (4) the Early Childhood Self-Concept Index, and (5) the California Preschool Social Competency Scale (CPSCS). For kindergarten testing, two measures were employed: the CPSCS and the GSRT. Findings indicated variation of mean I.Q. scores across all three waves favoring subjects who had attended preschool. In the first two waves of preschool subjects, variation between experimental and control groups on the social competency measure was also found to favor those who attended preschool. In kindergarten, social competency gains were shown by children who had attended preschool as well as by those who had not. However, significantly greater gains were made by females who had not attended preschool. Further study is being conducted to determine whether these differences can indeed be attributed to preschool attendance. (Author/RH)

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Effects of Preschool on Educationally Advantaged Children: Implication for Program Planning

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Abstract

As part of a study to investigate the immediate and long term effects of preschool upon educationally-advantaged children, data from three waves (N=291) of preschool-age subjects and kindergarten follow-up data on two waves (N=171) were analyzed. All children in the study sample were determined to be educationally-advantaged and demonstrated remarkable intellectual capabilities. Findings indicated there was variation of mean I.Q. scores across all three waves favoring subjects who had attended preschool. There was also variation between experimental and control groups of the first two waves on the social competency measure favoring those who attended preschool. In kindergarten, social competency gains were shown by children who had attended preschool as well as those who had not. However, significantly greater gains were made by females who had not attended preschool. Further study is continuing to determine if these differences can indeed be attributed to preschool attendance.

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Effects of Preschool on Educationally Advantaged Children: Implication for Program Planning

While it has been demonstrated that school achievement and life successes for disadvantaged children are positively influenced by a good preschool experience (Lazar, Darlington, Murray, Royce and Snipper, 1982; Schweinhart & Weihart, 1982), little research has been conducted to investigate the long-term or immediate effects of preschool on educationally-advantaged children. In the past two decades, studies utilizing preschool children from the middle and upper-middle socio-economic levels (SEL) have been concerned with program model evaluation and comparisons (Zimales & Silk, 1967; Beller, 1967; Guidubaldi, Bersani, Kehle & Sexton, 197?; Chatlin-McNichols, 1981; Cataldo & Salzer, 1982).

Although no one model has dominated the curriculum offered by early childhood educators, there is evidence that the "deficit hypothesis" (Hunt, 1961; Miller & Dyer, 1975) has influenced a number of programs developed for disadvantaged children. Stated briefly the deficit hypothesis is that children from economically and educationally disadvantaged homes receive less stimulation

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than children from economically and educationally advantaged homes. Programs for disadvantaged children are intended to make up this deficit by providing enriching experiences.

Several views have emerged with respect to the effect of preschool on educationally-advantaged children. While there is general agreement that proper environmental stimulation enhances the cognitive, physical, and personality development of the child, there is some disagreement as to how quickly the influences of a good environment rise to an ultimate desired level. One view is that all children, whether formally classified as "disadvantaged" or not, are under-stimulated. Accordingly, all children should be able to gain from a preschool environment that has been carefully constructed to meet their needs. Another view is that the majority of children, in homes where there are sufficient economic resources and where parents take an interest in fostering child development, will already be near the optimum stimulation level and will, therefore, not benefit noticeably from additional enrichment experiences such as those traditionally provided by early childhood education programs. Still others suggest that if no

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harmful effects can be shown as a direct result of the experience, then it is assumed there has been a positive impact.

In an effort to learn more about the effects of preschool attendance upon middle and upper-middle SEL children and their families, a longitudinal study was begun at Brigham Young University in 1980. The major objective of this ten year project has been to establish a data bank and thereby stucy the immediate gains and long-term effects of children's participation in the BYU Early Childhood Education Laboratory preschool program. Attention is also given to the effects upon parents as a result of their involvement in the parent education component of the preschool program. Ultimately, five waves of children and their parents will be followed from preschool through the fourth grade of elementary school. Thus far, preschool data from three of the five waves and follow-up kindergarten data on the first two waves have been collected and analyzed. The present report, then, is concerned with the immediate effects of preschool upon three waves of children and their parents in the study.

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Methods

Subjects. Each wave of the study sample consists of an experimental and a control group. Children who were randomly selected from a large pool of applicants have attended the campus preschool for a minimum of two semesters and who will be eligible for kindergarten the beginning of the coming school year compose the experimental groups. Control groups are comprised of applicants eligible for kindergarten the coming year who are not selected by the random draw for the campus preschool and whose parents give permission for their participation in the study. The control groups of the first three data waves were restricted to only those applicants who had not attended preschools or group child care programs prior to their entering kindergarten. Due to this stratification as well as some fluctuation in number of children selected each year to attend the preschool, the number of control and experimental subjects in each wave varied, as shown in Table 1.

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Insert Table 1 About Here

All children in the study were deemed education and achievement oriented due to several factors: living with both parents, the high education level of both parents, and the occupational level as well as the income of the employed parents being well above average for the Rocky Mountain region of the country. In addition, the large majority of the families applying to the BYU preschool program maintain a very active religious affiliation (Mormon) that emphasizes child-centered family activities. It should be noted that Mormon parents have been shown to have very high achievement expectations for their children (Dewey & McKinney, 1976).

Although the home and family experiences of the children in the sample are not typical, they may not be substantially different from those of the children of achievement oriented parents throughout our culture. In any case, the educational and financial advantages

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enjoyed by families of these children, as well as the religious emphasis, should work against the experimental design and make it less likely that preschool effects, over and above the effects of a good home environment, will be observed.

Preschool Program

The BYU preschool program provides a practicum setting for teacher training as one of its primary functions. For this reason, as well as the natural affiliation with the university, the program has been influenced by numerous teaching philosophies and curriculum models. The preschool program could best be described as traditional and eclectic. A balance of activities are offered which includes free selection of indoor and outdoor materials for discovery learning and play; group discussions and learning activities to develop basic concepts about the world we live in; and opportunity for creative expression through music, movement, language and art.

While the program may be similar to that offered at other university preschools, there is one notable exception. All parents who have children enrolled

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in the BYU preschool agree to participate in a weekly parent education program sponsored by the early childhood education faculty. The content of this program could also be described as traditional and eclectic. Parents may choose from five different methods of participation in parent education: (a) classes, (b) cassette tape recordings, (c) home visits by undergraduates majoring in early childhood education, (d) readings, and (e) participation in the preschool laboratory.

Data Collection

Five measures were selected for the phase one (preschool) testing. These included: (a) The Test of Motor Abilities for Young Children (TMAYC: Hirst, 1976) to assess physical development and motor skills. This measure included the typical items that are often used to assess a child's ability to hop on one foot, throw and catch a ball, walk a straight line, and such; (b) the Slosson Intelligence Test (SIT: Slosson, 1961) which is a short and individually given I.Q. test modeled after the Stanford Binet; (c) the Gesell School Readiness Test (GSRT: Ilg, Ames, Haines, and Gillespie, 1978), a standard measure of the child's cognitive readiness

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for formal education; (d) the Early Childhood Self-Concept Index (ECSCI: Larsen & Leigh, 1977) a locally devised measure of the child's positive self perceptions; and (e) the California Preschool Social Competency Scale (CPSCS: Levine, 1969) a two and a half hour observational measure of the child's social skills.

For the phase two (kindergarten) testing two measures were employed: the CPSCS and the GSRT. One item that was judged inappropriate for kindergarten children was replaced in the CPSCS and the measure was referred to as the KCPSCS for the second testing phase. The appropriate scales of the GSRT were used with the kindergarten children. In addition to the standardized test data from each child, family demographic data and data about the time and kinds of activities that both parents participated in with the target child were gathered via a parent questionnaire.

All measures were individually administered to children by college student testers, who had completed the standard training regime recommended by the test publishers or developers. Testing was completed in a two week period for both preschool and kindergarten

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phases. Children in control groups attended special two week preschool sessions on the BYU campus to facilitate the testing. The experiences provided in these special sessions were basically free selection play oriented.

Results

Data from the preschool and kindergarten testing phases of the first two subject waves and the preschool testing phase of the third wave were analyzed using several one-way and ultimately a multiple analysis of variance. Placement in the experimental and control group served as the independent variable and the five measures previously discussed served as the dependent variables. An analysis of the demographic data obtained from the parent questionnaire was also conducted.

Summary of Findings

*Intellectual Capabilities. The data analysis provided support for the assumption that the sample was educationallyadvantaged. Generally, the data indicate that both experimental and control subjects in the study show remarkable intellectual capabilities. Results from an analysis of all three data waves resembled earlier studies (Gray, Klaus, Miller, and Forrester,

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1966; Dreyer & Angler, 1969; and Schwienhart & Weihart, 1980) of deprived children and a comparison study (Guidubaldi, et al., 1974) conducted with middle-class children. These studies have shown some immediate gains in I.Q. scores for participants who had attended a quality preschool program. The present study also indicates some variation in I.Q. scores between experimental and control group subjects. As presented in Table 2 there is limited variation in comparing means derived from scores on the SIT between groups for Wave I. However, the variation is stronger for Waves II and III. The direction of the difference in all three waves favors children attending the preschool. When aggregated data were analyzed, children who attended preschool had a mean I.Q. of 131.7, while those who did not attend had a mean I.Q. of 127.1. This is a significant (< .05) difference.

*Parent Time With Child. In addition to findings which support the educational or achievement orientation of the sample, as presented in Table 3, the demographic data also yielded a difference between the experimental and control groups on the time mothers spend with their

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preschool-age children. As shown in Table 3, there was a negligible difference in the time experimental and control group fathers report spending with their children; however, control group mothers for all three waves reported spending more time per day with their preschool-age children than experimental mothers. The reported mean number of hours that both mothers and fathers spend with their children per day is considerably higher than that reported by parents in other parts of the country (Goldberg, 1981). It may also be noted that although there was an increase in the amount of time reported by mothers from Wave I to Wave III, the variation between groups within each wave remained similar. There was also a significant difference between the time mothers and fathers in both experimental and control groups of each wave spent with their children.

Insert Table 3 about here

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*School Readiness. Children in the first wave of the study sample who did not attend preschool tended to do better on two performance tasks as measured by the Gesell School Readiness Test. These performance tasks were size of written numbers and the omission of numbers from a written sequence. Other findings related to this measure were sporadic and will need further analysis with other data waves to become meaningful.

*Self-Concept and Motor Abilities. There were no significant findings linking the independent variable to either the measure of self-concept or the test for motor abilities. A number of isolated differences did appear from the extensive analysis of these testing measures. For the most part, however, these lesser findings were not orderly and did not appear with a greater frequency than could be expected by chance.

*Social Competency. There was a significant difference between mean scores of experimental and control groups for Waves I and II on the measure of social competency. The variation was particularly strong between groups in Wave I, visible in Wave II, but non-existent for Wave III. A three-way analysis of variance for unequal

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cell sizes using Group (experimental vs. control), sex, and Wave (I vs. II) as independent variable was explored for this analysis. The results of the data analysis show main effects for Group ($F=10.83$; $df=1,199$; $p < .001$) and Wave ($F=4.62$; $df=1,199$; $p < .05$) with no other main effects or interaction ($p > .10$).

*Kindergarten Gains. Test scores were analyzed for Waves I and II subjects at the kindergarten level. This analysis did not yield any statistically significant group differences on either the GSRT or the KCPSCS. There was no evidence from the kindergarten testing of the group differences which had resulted from preschool testing of the two school readiness tasks favoring preschool nonattendance. However, as shown in Table 4, the variation pattern of mean scores on the social competency measure in kindergarten for the most part was similar to that in preschool with both experimental and control groups showing substantial gains. There was one exception to this pattern. The kindergarten mean of experimental females in Wave II was slightly lower than the preschool mean.

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Insert Table 4 about here

The gain in social competency scores from preschool to kindergarten for control group females in both waves is particularly significant. Scores of the females in the experimental group of Wave I and the male groups in both waves increased but to a lesser extent than those of the control group females. It will be necessary to consider the data from subsequent years in order to determine if the differences that have been observed in the first two data waves can be attributed to preschool participation or the result of chance variation between experimental and control groups.

Discussion

Although the present study does not provide sufficient evidence to project the value of preschool attendance or the importance of a particular curriculum for educationally-advantaged children, there are some rather strong indications that preschool attendance does make a difference.

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Of particular interest to this study are the consistently high I.Q. scores evidenced across waves and groups. This gives cause to contemplate whether children who function at a high intellectual level should be further exposed to a preschool program designed to increase performance. Indeed, the law of diminishing returns may suggest that emphasis should be placed on learning experiences other than cognitive. On the other hand, "accelerated" programming which stresses structured learning experiences may provide a better challenge for the intellectual level of educationally advantaged children than the present "elaborated" program.

Swift's (1964) statement that "the effectiveness of a given (preschool program) . . . will depend on . . . its provision of experiences which supplement rather than merely duplicate experiences (the child) is receiving elsewhere" (p. 280), has particular relevance to the findings of the present study. The finding that children in the first two study waves who attended preschool rated higher on a measure of social competency is perhaps rooted in the subtle difference between the experiences open to the two groups. The experimental

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group had a two and one half hour peer group interaction four days a week while the control group, for the most part, had no comparable opportunity. It would seem that the preschool participation did indeed provide the opportunity for children to develop social skills and interactive abilities. But why, then was it not replicated in the third wave?

Another intriguing but not wholly unexpected finding of the study dealt with the kindergarten phase testing data. Although the difference between groups was not significant, both children who attended preschool (with the exception of females in Wave II) and children not attending demonstrated substantial gain in social competency when the measure was given in kindergarten. However, if social competency were the only concern, the fact that non-attending females showed greater gains than the gains made by all other children in the study gives cause to question whether there really is an advantage for females to have a preschool opportunity before entering kindergarten.

In summary, findings from the present study have confirmed basic assumptions concerning the intellectual

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capabilities of the study sample and thereby creating the question as to what type of preschool program may best serve the needs of educationally-advantaged children. An increase in IQ scores was attributed to preschool attendance. The study further provided evidence that social competence for two of the study waves was enhanced through preschool participation. However, the increase was not replicated in Wave III and the difference evidenced in preschool was diluted in kindergarten where greater gains were demonstrated by females who had not attended preschool. It is evident that further study is needed to determine if these and/or other effects will continue to appear in succeeding waves. As additional phases of the project are completed, it is expected greater clarification of the role of preschool in various aspects of development as well as appropriate programing for educationally-advantaged children will emerge.

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TABLE 1

Number and Distribution of Subjects in Waves I, II, and III

Wave	Testing Phase	Experimental			Control		
		Male	Female	Total	Male	Female	Total
Wave 1	Phase 1 Preschool N = 129	40	47	87	20	22	42
	Phase 2 Kindergarten N = 111	32	41	73	20	18	38
Wave II	Phase 1 Preschool N = 85	29	25	54	14	17	31
	Phase 2 Kindergarten N = 67	23	22	45	9	13	22
Wave III	Phase 1 Preschool N = 79	20	30	50	18	11	29

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TABLE 2

Comparison of the Means: IQ Scores by Wave, Group and Sex

Group	Sex	Wave I Mean	Wave I SD	Wave I N	Wave II Mean	Wave II SD	Wave II N	Wave III Mean	Wave III SD	Wave III N
Experimental		130.5	17.04	86	133.1	14.69	54	126.8	16.29	50
	Male	128.5	18.82	39	131.4	16.51	29	131.7	19.16	20
	Female	132.2	15.41	47	135.1	12.27	25.	123.6	13.27	30
Control		129.4	11.42	41	127.4	16.72	31	124.8	12.70	29
	Male	129.4	10.36	19	128.3	17.05	14	125.3	12.05	18
	Female	129.4	12.53	22	126.7	16.93	17	122.9	14.27	11

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TABLE 3

Demographic Comparisons by
Wave and Group

Category	Wave I Exp	Wave I Con	Wave II Exp	Wave II Con	Wave III Exp	Wave III Con
Total number of cases	87	42	54	31	50	29
Male subjects	40	20	29	14	20	18
Female subjects	47	22	25	17	30	11
Number of chldrn in fmly	4.3	4.7	3.9	3.5	3.9	4.0
Sblngs oldr than trgt chld	1.1	.9	1.3	1.2	1.0	1.0
Sblngs ynger than trgt chld	1.1	.9	1.3	1.2	1.0	1.0
One parent family	3.8%	2.6%	3.7%	0.0%	6.3%	3.4%
Two parent family	96.2%	97.4%	96.3%	100.0%	93.7%	96.6%
MEAN TIME PER DAY						
Mthr w/ trgt chld	1.7hrs	2.6hrs	2.2hrs	2.7hrs	3.1hrs	2.7hrs
Fthr w/ trgt chld	.7hrs	.9hrs	1.0hrs	.8hrs	.8hrs	1.0hrs
MOTHER'S COLLEGE EDUCATION						
Attended college	92.0%	85.6%	92.7%	77.4%	92.0%	93.1%
College graduate	58.5%	40.6%	58.2%	29.0%	54.0%	44.8%
FATHER'S COLLEGE EDUCATION						
Attended college	96.6%	90.4%	96.4%	83.9%	92.0%	96.6%
College graduate	85.2%	69.0%	70.9%	54.9%	66.0%	79.4%
FATHER'S OCCPTNL STATUS						
Student	2.3%	2.6%	3.8%	12.9%	0.0%	3.4%
Skilled Laborer	11.5%	15.4%	15.4%	22.6%	10.6%	13.8%
Semi-Professional	28.7%	20.5%	61.5%	41.9%	66.0%	69.0%
Professional	57.5%	61.5%	19.3%	22.6%	23.4%	13.8%
FAMILY INCOME LEVEL						
Less than $15,000	13.9%	27.8%	7.9%	21.4%	4.3%	10.4%
$15,000-$25,000	60.4%	36.1%	43.1%	39.3%	57.4%	58.6%
More than $25,000	26.7%	36.1%	49.0%	39.3%	38.3%	31.0%
MOTHER'S EMPLYMNT STATUS						
Full-time	3.8%	5.3%	9.3%	6.5%	4.3%	03.4%
Part-time	2.6%	2.6%	25.0%	12.9%	27.7%	10.4%
None	93.6%	92.1%	64.8%	80.6%	68.1%	86.2%

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TABLE 4

Comparison of the Means: CPSCS and KCPSCS
by Wave, Group and Sex

				CPSCS Preschool		KCPSCS Kindergarten		
Wave	Group	Sex	N	Mean	SD	Mean	(Gain)	SD
Wave I	Experimental		73	92.5	13.4	98.3	(5.8)	11.9
		Male	33	92.6	13.0	98.0	(5.4)	10.9
		Female	40	92.4	14.0	98.5	(6.1)	12.6
	Control		31	86.1	12.2	95.7	(7.8)	12.4
		Male	13	83.6	12.4	89.2	(5.6)	12.9
		Female	18	87.9	12.1	100.4	(12.5)	10.0
Wave II	Experimental		45	95.6	14.9	97.2	(1.6)	10.3
		Male	23	92.5	16.7	96.3	(3.8)	11.9
		Female	22	98.8	12.2	98.1	(-0.7)	8.5
	Control		22	89.9	11.7	96.4	(6.5)	8.8
		Male	9	88.6	11.8	93.7	(5.1)	8.6
		Female	13	90.8	12.1	98.2	(7.4)	8.7

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